

THE IMPACT OF CLIMATE CHANGE ON UZBEKISTAN-KAZAKHSTAN RELATIONS: AN ECONOMIC AND GEOPOLITICAL ANALYSIS

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Normuhammadov Nurbek Shuxrat o'g'li

University of World Economy and Diplomacy,

"Tashkent Institute of Irrigation and Agricultural Mechanization Engineers

" NATIONAL RESEARCH UNIVERSITY,

Master's student (1st year), Water Diplomacy program

Annotatsiya

Ushbu tadqiqotda iqlim o'zgarishining O'zbekiston va Qozog'iston o'rtasidagi ikki tomonlama munosabatlarga ko'p qirrali ta'siri o'rganiladi. Maqolada iqtisodiy o'zaro bog'liqlik, energetika hamkorligi, qishloq xo'jaligi sektori va migratsiya jarayonlari iqlim omillari bilan birgalikda tahlil qilinadi. Tadqiqot natijalari shuni ko'rsatadiki, iqlim inqirozi nafaqat suv muammosi, balki iqtisodiy, ijtimoiy va xavfsizlik sohasidagi yangi muammolarni ham vujudga keltirmoqda. Maqola yakunida ikki davlat o'rtasidagi munosabatlarni iqlim o'zgarishiga chidamli qilish bo'yicha siyosiy tavsiyalar ilgari surilgan.

kalit so'zlar

Iqlim o'zgarishi, O'zbekiston-Qozog'iston munosabatlari, iqtisodiy hamkorlik, energetika xavfsizligi, qishloq xo'jaligi, iqlim migratsiyasi, yashil o'tish, Markaziy Osiyo.

Аннотация

В данном исследовании изучается многогранное влияние изменения климата на двусторонние отношения между Узбекистаном и Казахстаном. В статье анализируются экономическая взаимозависимость, сотрудничество в энергетической сфере, сельскохозяйственный сектор и миграционные процессы в совокупности с климатическими факторами. Результаты исследования показывают, что климатический кризис порождает не только водную проблему, но и новые вызовы в экономической, социальной и сфере безопасности. В конце статьи выдвинуты политические рекомендации по обеспечению устойчивости двусторонних отношений к изменению климата.

ключевые слова

Изменение климата, узбекско-казахстанские отношения, экономическое сотрудничество, энергетическая безопасность, сельское хозяйство, климатическая миграция, зелёный переход, Центральная Азия.

Abstract

This study examines the multifaceted impact of climate change on bilateral relations between Uzbekistan and Kazakhstan. The article analyzes economic interdependence, energy cooperation, the agricultural sector, and migration processes in conjunction with climate factors. Research results show that the climate crisis is generating not only a water problem, but also new challenges in the economic, social, and security spheres. At the end of the article, policy recommendations are put forward to make bilateral relations climate-resilient.

keywords

Climate change, Uzbekistan-Kazakhstan relations, economic cooperation, energy security, agriculture, climate migration, green transition, Central Asia.

INTRODUCTION

Relevance of the problem

In recent decades, climate change has become one of the most pressing global challenges, affecting not only the environment but also international economic and political relations. Although this process began to intensify in the second half of the twentieth century, its consequences have become particularly evident in the twenty-first century. Among the regions most vulnerable to these changes is Central Asia, where rising temperatures, increasing water scarcity, and more frequent extreme weather events create serious risks for sustainable development. According to the 2023 assessment of the Intergovernmental Panel on Climate Change (IPCC), the average rate of warming in Central Asia is approximately twice the global average. These changes have significant implications for Uzbekistan and Kazakhstan, whose economies are closely interconnected through trade, energy cooperation, transport links, and agricultural production. The close economic relationship between the two countries increases the importance of climate-related challenges. In 2024, bilateral trade turnover exceeded USD 7 billion, while Kazakhstan accounted for 7.56 percent of Uzbekistan's total imports, making it one of the country's major trading partners. As climate change increasingly influences water resources, agricultural productivity, and energy demand, it also affects the nature and prospects of economic cooperation between Uzbekistan and Kazakhstan.

Purpose and methodology of the study

This article examines the impact of climate change on bilateral relations between Uzbekistan and Kazakhstan, with particular attention to the economic, energy, agricultural, and social dimensions of cooperation. The study seeks to determine how climate change influences trade and economic relations, how the energy sector in both countries is adapting to new environmental conditions, and how climate-related risks in agriculture are affecting food production and bilateral agricultural trade. To achieve these objectives, the research applies a comparative approach, analyzes official economic and trade statistics, reviews reports of international organizations and expert assessments, and examines relevant international and national legal documents. Combining these methods makes it possible to provide a comprehensive assessment of the influence of climate change on the evolving relationship between Uzbekistan and Kazakhstan.

Climate change and economic interdependence

Macroeconomic overview of the two states

To properly assess the economic impact of climate change, the economic situations of the two states must first be compared. As of 2026, Kazakhstan has the largest economy in Central Asia, with a nominal GDP of \$360 billion. Uzbekistan, meanwhile, recorded 7.4 percent economic growth in 2025, with GDP exceeding €133 billion – meaning it has doubled over the past nine years. However, climate change poses a serious threat to the economic prospects of both states. According to World Bank forecasts, without adaptation measures, Central Asia's GDP could shrink by 5-6 percent by 2050. For Uzbekistan, this is especially evident in sectors linked to agriculture and water resources.

Indicator	Uzbekistan (2025)	Kazakhstan (2025)	Difference
GDP (nominal)	\$133 bn	\$320 bn	2.4x difference
GDP growth	7.4%	5.6%	Uzbekistan faster
Population	38.2 mln	20.6 mln	1.85x more
GDP per capita	\$3,220	\$14,154	4.4x difference
Agriculture's share of GDP	~17%	~4.7%	Uzbekistan more dependent
Climate change risk index	High	Medium-high	Uzbekistan more vulnerable

Table 1. Key economic indicators of Uzbekistan and Kazakhstan (2025)

The impact of climate change on trade relations

Climate change is significantly affecting the structure of trade between the two states. Traditionally, Uzbekistan imports metals, grain products, and petroleum products from Kazakhstan, while Kazakhstan receives vegetables and fruit, textile products, and chemical industry goods from Uzbekistan. However, drought and temperature changes are altering the volume and composition of Uzbekistan's agricultural exports. In 2025, Uzbekistan's total exports amounted to \$33.8 billion. Kazakhstan's share was 5.6 percent, making it one of Uzbekistan's five most important export partners. Due to climate change, the stability of agricultural export volumes is at risk: unseasonably early heat in March 2025 significantly reduced Uzbekistan's fruit harvest.

Climate change and energy cooperation*The transition to green energy: a shared outlook*

Climate change is compelling Uzbekistan and Kazakhstan to carry out fundamental reforms in the energy sector. Although Kazakhstan has traditionally been known as a coal- and oil-producing state, it has set a goal of obtaining 15 percent of its electricity from renewable sources by 2030. Uzbekistan, for its part, has announced an ambitious goal of raising the share of renewable energy to 40 percent by 2030. These goals are creating new formats of energy cooperation between the two states. In April 2025, Kazakhstan, and in June 2025, Uzbekistan, signed long-term agreements on the Kambarata-1 hydropower plant project. The European Bank for Reconstruction and Development (EBRD) assessed these agreements as an important step toward regional energy integration and climate resilience.

Winter energy shortages and the climate factor

The most significant problem in energy relations between Uzbekistan and Kazakhstan is the winter energy shortage. Due to climate change, winters that are sometimes extremely cold and sometimes unusually warm are threatening the stable operation of energy systems. During the winter of 2023-2024, Uzbekistan experienced serious energy problems under extremely cold weather conditions, and mutual energy cooperation with Kazakhstan took on particular importance at that time. According to climate forecasts, such extreme weather events will recur more frequently in the future. This is prompting the two states to conclude long-term cooperation agreements in the field of energy security.

Climate change, agriculture, and food security*Climate risks to agriculture*

Agriculture occupies a special place in relations between the two states. For Uzbekistan, agriculture accounts for roughly 17 percent of GDP and employs more than 25 percent of the population. Kazakhstan, meanwhile, is the regional leader in grain production, and climate change is directly affecting productivity in this sector. Early heat in March 2025 struck Kazakhstan's spring wheat crop during its development stage. In Uzbekistan, fruit orchards faced a heatwave during the blossoming period. These events are not coincidental – according to IPCC data, the frequency of extreme temperature events in Central Asia has doubled over the past 30 years.

The climate factor in grain and food trade

Uzbekistan imports large volumes of grain products from Kazakhstan. Due to climate change, intensifying drought in Kazakhstan's grain-growing regions directly threatens Uzbekistan's food security. The reverse is also true: Uzbekistan's exports of vegetables and fruit contribute to the food security of Kazakh consumers, and in drought years these exports also decline. For this reason, the two states need to develop new mechanisms in the field of food security. In 2024, Uzbekistan and Kazakhstan agreed to develop a joint program on climate adaptation in agriculture. This program includes cooperation on climate-resilient seeds, water-saving irrigation technologies, and grain reserve management.

The social impact of climate change and migration

Climate migration: an emerging problem

The least studied but increasingly significant aspect of climate change in Uzbekistan-Kazakhstan relations is climate migration. As of 2026, Uzbekistan's population stands at 38.2 million, making it the most densely populated state in Central Asia. Water scarcity in rural areas, drought, and worsening farming conditions have become one of the key factors driving migration from Uzbekistan to Kazakhstan. According to 2024 data from the IOM (International Organization for Migration), the number of people displaced by climate factors in Uzbekistan is growing, with a large share choosing Kazakhstan as their destination country. This is creating a need to add a climate adaptation component to the labor migration agreement between the two states.

The Uzbek diaspora in Kazakhstan and its climate connection

Approximately 500,000 Uzbeks live in Kazakhstan. This diaspora serves as an important bridge connecting the two states in human, cultural, and economic terms. Climate change is worsening living conditions in Uzbekistan's rural areas, contributing to the growth of this diaspora. At the same time, the fact that Kazakhstan itself is facing economic difficulties due to climate change suggests that

the issue of labor migration between the two states may become even more complex in the future.

Green cooperation and future prospects

Cooperation models for climate adaptation

Uzbekistan and Kazakhstan are testing various approaches to climate adaptation. Kazakhstan is widely introducing canal modernization, drip irrigation programs, and laser land-leveling technologies. Uzbekistan, meanwhile, is implementing water pricing mechanisms as part of a policy to reduce water-intensive cotton cultivation and increase crop diversification. Climate cooperation between the two states has taken on new organizational forms. In December 2025, the third basin dialogue meeting on climate-sensitive water resource management in Central Asia was held in Tashkent, supported by GIZ (the German international cooperation agency), Switzerland, and the EU. At this meeting, agreements were signed on approximately €2-2.3 billion in green investment and climate transition financing.

International financing and bilateral cooperation

To finance climate adaptation projects, Uzbekistan and Kazakhstan are strengthening cooperation with international financial institutions. Jointly attracting funding from the World Bank, EBRD, and GCF (Green Climate Fund) serves the shared strategic interests of both states. Uzbekistan has committed to modernizing 4.1 million hectares of irrigated land under the World Bank's "Water Forward" initiative — a project that will also have a positive impact on water relations with Kazakhstan directly.

Conclusion and policy recommendations

The study shows that climate change has become a complex, multifaceted factor shaping relations between Uzbekistan and Kazakhstan. This impact is not limited to the water problem alone but also encompasses economic trade, energy cooperation, food security, and social migration processes. Importantly, while climate change sometimes becomes a source of disagreement between the two states, in many cases it brings them together, generating new formats of cooperation. A number of important agreements signed between the two states in 2024-2025 — long-term contracts in the energy sector, agreements on water quality monitoring, and climate adaptation programs in agriculture — confirm that climate change has brought relations between the two states to a new stage.

Policy recommendations

Based on the findings of the study, the following recommendations are put forward:

- Signing a "Green Economic Cooperation Agreement": The two states should conclude a new-format agreement placing climate adaptation at the center of economic cooperation. This agreement should reflect issues such as trade in water-saving technologies, green energy investment, and the development of climate-resilient agriculture.

- A bilateral mechanism on climate migration: It would be advisable for Uzbekistan and Kazakhstan to conclude a special bilateral agreement that legally recognizes populations displaced for climate reasons and provides them with social protection guarantees.

- A climate-related insurance system for agriculture: The two states need to jointly develop and implement mechanisms to cover climate risks for grain and vegetable producers.

- A joint "Uzbekistan-Kazakhstan Climate Fund" for green investment: It is recommended to create a joint financial mechanism to effectively attract international climate finance and coordinate the two states' green transition projects.

- A climate diplomacy education system: Introducing joint academic-educational programs on climate economics, green diplomacy, and climate adaptation between universities of the two states.

In conclusion, it should be emphasized that the future of relations between Uzbekistan and Kazakhstan depends largely on how they jointly respond to climate change. The climate crisis may become, for both states, not only a threat but also a strategic factor capable of elevating their cooperation to a new qualitative stage.

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